

1. An isolated nucleic acid molecule comprising a nucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2 and a bacterial promoter sequence.

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2. The isolated nucleic acid molecule of claim 1 further comprising a nucleotide sequence encoding a bacteriophage coat protein.

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3. The isolated nucleic acid molecule of claim 1 wherein the bacterial promoter sequence directs transcription in gram positive bacteria.

4. The isolated nucleic acid molecule of claim 1 wherein the bacterial promoter sequence directs transcription in gram negative bacteria.

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5. A genetically engineered bacteriophage comprising a heterologous nucleic acid sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

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6. A method for providing a genetically engineered bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid of SEQ ID NO:2, the method comprising:

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(a) providing an isolated nucleic acid molecule comprising a 5' region, a central region and a 3' region, the 5' region and the 3' region comprising nucleotide sequences present in a selected bacteriophage genome, the central region comprising a nucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;

(b) contacting a bacterial cell lysogenic for the selected bacteriophage genome with the isolated nucleic acid molecule such that the isolated nucleic acid is introduced into the bacterial cell; and

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(c) allowing the isolated nucleic acid molecule to recombine with the bacteriophage genome present in the bacterial cell, thereby producing a genetically engineered bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid of SEQ ID NO:2.

7. A method for providing a genetically engineered bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid of SEQ ID NO:2, the method comprising:

5 (a) providing an isolated nucleic acid molecule comprising a 5' region, a central region and a 3' region, the 5' region and the 3' region comprising nucleotide sequences present in a selected bacteriophage genome, the central region comprising a nucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2;

10 (b) contacting a bacterial cell lysate with the isolated nucleic acid molecule and with an isolated DNA molecule comprising the selected bacteriophage genome; and

(c) allowing the isolated nucleic acid molecule to recombine with the isolated DNA molecule comprising the bacteriophage genome and subsequently form bacteriophage particles, thereby producing a genetically engineered bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid of SEQ ID NO:2.

8. A method for producing bacteriophage for reducing the viability of a selected type of bacteria, the method comprising:

(a) identifying a bacteriophage that is capable of infecting a selected type of bacteria;

20 (b) preparing a genetically engineered bacteriophage genome comprising a nucleic acid sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2 and the genome of the identified bacteriophage; and

(c) preparing bacteriophage comprising the genetically engineered bacteriophage genome.

25 9. A composition comprising a genetically engineered bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2 and a pharmaceutically acceptable carrier.

30 10. A method for treating a bacterial infection comprising administering to a patient having a bacterial infection a composition comprising a genetically modified bacteriophage,

the genetically modified bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

11. The method of claim 10 wherein the composition is administered orally.

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12. The method of claim 10 wherein the composition is administered topically.

13. The method of claim 10 wherein the composition is administered parenterally.

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14. A method for eliminating a selected type of bacteria present in an aqueous composition, the method comprising adding to the composition genetically modified bacteriophage comprising a heterologous nucleic acid molecule encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2.